



THE VIDEO GAME DEBATE

Unravelling the Physical,
Social, and Psychological
Effects of Digital Games

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A BRIEF HISTORY OF VIDEO GAMES

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Evolutionary biologists use a term called "convergent evolution" to explain the existence of similar traits in living organisms that are otherwise markedly different and only distantly related.¹ For example, similarities between the body types of fish, marine mammals such as dolphins and whales, and the extinct ichthyosaur may give the impression that these animals share a similar biological class even though other less superficial characteristics of these animals clearly identify them as members of separate animal classes. Similarly, bats may seem more closely related to birds than to other mammals because of their shared wings and ability to fly even though bats have little else in common with birds, including the anatomical location of their wings (bats' wings are essentially long webbed fingers, while the feathers of birds' wings are attached to the equivalent of the forearm and wrist). In these and other examples, it is all too easy to misperceive beasts that have little in common as part of one family.

So it is with video games. The social, cultural, and economic presence of video games is so overwhelming in the electronic media milieu, and the term "video game" is so often used as a talismanic catch-all for nearly any form of interactive digital entertainment, that it is easy to assume that the technological and social developments leading to what we now call "video games" are not composed of a single evolutionary pathway. Instead, the video games of today represent a convergence of substantially different trajectories of technological developments providing discrepant forms of entertainment to audiences with different needs. The result is a medium that is very diverse in its functions, content, and audiences – so diverse, in fact, that like birds and bats or dolphins and fish, many shared characteristics among some video games may be only superficial. Just as organisms described as examples of convergent evolution are very different creatures who seem more similar than they are because of a shared

functional trait, many video games are actually very different entertainment products with different technological and social histories distinguished from other electronic media only by their shared primary function of providing interactive entertainment to their users. This kludge of technological and social bloodlines and audiences under the loosely defined blanket term "video games" is a challenge for those seeking to understand the impact of the medium. The impact of video games is great, but it is far from uniform because video games are far from uniform.

The Converging Ancestry of Video Games

Nuclear Roots: Action Simulations from Oscilloscopes to Arcades to Consoles

The First Video Games

The most resounding impact William "Willy" Higinbotham had on the world had nothing to do with video games. Higinbotham worked on the team that developed the first atomic bomb at Los Alamos Laboratory (now Los Alamos Research Laboratory), and after that experience he became a leading figure in the nuclear non-proliferation movement as a founder and chair of the Federation of American Scientists.² As a relative footnote to his role in such pivotal global events, Higinbotham is also known for having arguably developed the first electronic video game. While serving as a senior physicist at Brookhaven National Laboratory, Higinbotham was aware that even though the innovations his facility was producing could be world-changing, they were not necessarily impressive on display to visitors (his work in Los Alamos being a notable exception). To entertain attendees at an annual public visitors' day in 1958, he spent a few hours developing a rudimentary tennis simulation using analog computer technology designed to track missile trajectories and a pair of 5-inch oscilloscope screens.² The result, *Tennis for Tivo*, was a popular feature for visitors, but appeared only once more at the next annual visitors' day. Higinbotham couldn't even be bothered to pursue a patent for his patched-together diversion, which was based in technology that was already on its way to obsolescence; digital computers had already begun to appear, and much larger cathode ray tube displays were in use in household televisions. Only more than a decade later, when the eerily similar *Pong* burst onto the commercial scene, did the significance of Higinbotham's *Tennis for Tivo* as a milestone in video game history become apparent.³

As with most remembered milestones in the history of communication technology, the actual story of the first video game is not so clear-cut as Higinbotham and *Tennis for Tivo*. Just as tales of Alexander Graham Bell's telephone and Samuel Morse's telegraph are famous, but oversimplified by the absence of references

to earlier prototypes and competing developments,⁴ there were other prototypes that could be called electronic games that were developed before Higinbotham's 1958 demonstration. OXO, a simulation of the popular pencil-and-paper game called "Noughts and Crosses" or "Tic Tac Toe," was developed in 1952 as part of Alexander "Sandy" Douglas' doctoral work at the University of Cambridge.⁵ While the program ran on a digital computer (the Electronic Delay Storage Automatic Calculator, or EDSAC) and used a cathode ray tube display, OXO often eludes credit as the first video game because it lacked a moving graphic display. A similar effort was a *draughts* (checkers) simulation made in 1951 by Christopher Strachey at England's National Physical Laboratory in London, which was a pioneering artificial intelligence program.⁶ British engineering firm Ferranti exhibited a computer developed to play the game *Nim* using a series of lights as an interface at the Festival of Britain in 1951,⁷ and famed British mathematician Alan Turing worked with Dietrich Prinz on a rudimentary chess simulation that had no visual interface and was programmed by Prinz in 1951.⁸

Another argument for the earliest origin of the video game can be based on a patent for a "Cathode Ray Tube Amusement Device" filed in 1947 and issued in 1948.⁹ That device, developed by Thomas T. Goldsmith, Jr. and Estle Ray Mann at Dumont Laboratories in Upper Montclair, New Jersey, allowed users to control a dot on a screen to aim at paper overlay targets, with successful targeting tracked mechanically rather than by computer processing. While sharing some visual display traits with Higinbotham's *Tennis for Tivo* game, Goldsmith and Mann's device was completely mechanical and used no computer program or memory. There is therefore a good case for *Tennis for Tivo* as the first video game prototype because earlier putative "first" video games lacked either a graphical motion display (e.g., *Nim*, *OXO*) or computing technology (e.g., the Cathode Ray Tube Amusement Device). Bragging rights regarding which invention might truly be called the first video game notwithstanding, it is notable that all of these early precursors and prototypes simulated a game or sport, and of these the graphical motion display is frequently cited as a necessary criterion for an early prototype to be called a "video game." Thus, even retrospective glances at video game history place a heavy emphasis on action and simulation as defining characteristics of video games.

Tennis for Tivo and its various predecessors were never widely played or released commercially; they were either produced only as working prototypes or exhibited to the public at isolated events. The first video game to find a large audience and be available beyond a single exhibition was *Spacewar!* Initially developed by three students at the Massachusetts Institute of Technology, Stephen R. "Slug" Russell, J. Martin Graetz, and Wayne Witanen (with help from others at later stages), in 1962, *Spacewar!* allowed two players to control dueling spaceships and attempt to shoot each other with torpedoes while orbiting a black hole.¹⁰ *Spacewar!*, played using a cathode ray tube display and

custom-built controllers on the Digital Equipment Corporation's PDP-1 computer, also featured a score display, a player-friendly feature not available on the oscilloscope display used by *Tennis for Two*. This and other competition-oriented features ensured that *Spacewar!* was a hit. Within a year of its 1962 demonstration at the Massachusetts Institute of Technology's annual Science Open House in May, 1962, copies and variations of the *Spacewar!* program began to emerge at research laboratories across the United States, and the game was being played not only on PDP-1 computers but on other computers that used a cathode ray tube display as well.

A much more polished video game than *Tennis for Two*, *Spacewar!* might also be considered the first video game, especially as *Spacewar!* used digital computing hardware rather than analog technology. More relevant to the video game industry boom to come, *Spacewar!* was certainly the first video game to be commercialized. While the actual *Spacewar!* game as originally programmed could not be commercialized because it was played on expensive research computers that were usually inaccessible to the public, the first coin-operated arcade games were both adaptations of *Spacewar!*: *Galaxy Game*, a one-of-a-kind arcade unit that debuted on the Stanford University campus in Palo Alto, California in 1971 and was the first coin-operated video game, and *Computer Space*, a mass-produced coin-operated arcade game released later the same year throughout the United States.¹¹ Therefore, whatever early device is credited as the first video game, there's no debating that *Spacewar!* accomplished two milestones important to the scalability of the video game as a mass medium: it was the first video game to be played on more than one machine, and the first video game to be adapted for commercialization.

While the technologies employed to create the first video game prototypes and their predecessors varied, some conceptual themes are apparent across all of these early games. Each had a basis in simulating competition, either competitive action simulations or simulations of competitive strategy games. While some of the early precursors imitated competitive board games and parlor games (OXO, chess, draughts/checkers, *Nim*), the prototypes most often referred to as actual video games and the first video game to evidence the medium's commercial potential featured competitive action simulations of sport or combat (Cathode Ray Tube Amusement Device, *Tennis for Two*, *Spacewar!*). Therefore, even in the earliest roots of video games an emphasis is established on conceptual inspiration from simulation of competitive games and other competitive activities, sometimes based only in strategic competitions like board games or parlor games but more often based in action simulations of sport or combat.

Commercial Success in Arcades and the Home

Just as the first video game prototypes were conceptually rooted in simulating the themes of competitive enterprises from board games to sport to war, the

biggest early commercial successes in video game history drew from the same sources of inspiration. While *Spacewar!* adaptation *Computer Space* was not commercially successful as the first mass-produced commercial arcade game, the release of *Pong* by Atari, Inc. the following year in 1972 met commercial success immediately beginning with its well-received introduction at a local watering hole called Andy Capp's Tavern.¹² *Pong* held to the same tennis theme as *Tennis for Two*, continuing the tradition of video games' reliance on simulations of competitive activities. The year 1972 also saw the release of the first commercial home video game console, the Magnavox Odyssey, which featured sport and shooting games among its game titles.¹³ The Odyssey console used light signals combined with overlays placed on the users' television screens to simulate graphics and featured predominantly sports and action games, though some games featured other simulations such as roulette. Other successful arcade and home consoles would follow, once again with action sport and combat simulations predominant in their themes. In fact, the popular Atari Video Computer system (VCS, later renamed the Atari 2600 as later console versions were developed) was released with a game titled *Combat* that featured 27 combat games such as tank and biplane duels.¹⁴ Oddly enough, the first video game industry crash in 1977 was precipitated in part by a glut of *Pong* copycats on the arcade market.¹⁵

Action games also defined the video game industry's recovery from its 1977 crash, most notably the iconic *Pac-Man* coin-operated arcade game released by Namco in 1980. *Pac-Man*'s simple action hunt-and-chase play made the game a commercial success and a cultural phenomenon.¹⁶ In fact, *Pac-Man* was so popular that after the arcade game sparked a resurgence from the 1977 industry crash, the let-down from a much-anticipated but poorly produced console version of *Pac-Man* contributed to a second video game industry crash in 1983.¹⁷ The early 1980s also saw a rise in personal computer ownership and a corresponding rise in video game play on those computers, including the popular game-friendly Commodore 64 home computer released in 1982.¹⁸ (Sales of personal computer hardware and software used to play video games may have been something of an exception to the game industry recession of 1983, though considering the multiple household functions of most home computers it is difficult to assess how much personal computer hardware at the time was bought partially or wholly for the purpose of playing video games.) In any case, the recovery of the industry was led by Nintendo and its Nintendo Entertainment Center home console, which rose to fame on the whimsical action play of its flagship *Super Mario Brothers* game, first released in Japan in 1985.¹⁹ While advances in graphics from the first video games allowed direct sport and combat simulations to give way to fantasy themes in *Pac-Man*, *Super Mario Brothers*, and a host of other titles by the 1980s, the presence of action-based themes related to sport and combat continued to dominate these arcade and console hits as well.

Since the Nintendo-led recovery from the infamous 1983 crash of the video game industry, home consoles and computers have continued to erode the arcade video game market. While access to licensed adaptations of arcade hits was an integral part of video game console makers' success in the early 1980s, the growing success of consoles and the development by Nintendo and other companies of popular console game characters and franchises not based in arcade games limited console makers' reliance on arcade hits by the latter half of that decade.²⁰ In the years since, the trend has continued, with home console and personal computer games burgeoning at the expense of a flagging arcade market.²¹ The 1990s saw home video games begin to feature expanded production budgets and innovations such as three-dimensional graphics, faster processors, a shift from game software using ROM cartridges to optical CDs that could hold much more program data, and the ability to hold multi-player sessions using Local Area Network (LAN) connections and the Internet. The pace of innovation has continued since, with multiple "generations" of home game consoles piggybacking incremental advances in game consoles' graphical realism, data storage and processing capacity, control interfaces, and online accessibility.²² The parallel development of a variation on the home console, the handheld mobile game device, has followed a similar technological trajectory over the decades, starting with early handheld devices in the late 1970s that featured simple LED arrays for displays and beeps for sound feedback to approximate competitions such as auto races and American football games and eventually evolving into modern handheld consoles offering parallel versions of home console hits – as well as games released for play on mobile phones and tablets.

Through so much technological advancement over decades, though, the video game industry's most popular titles remain heavily fixed in the themes of simulating sport and combat that inspired the first video game prototypes. The top ten best-selling video games in the United States in 2013 included two games from the perennially popular military-themed *Call of Duty* franchise (*Call of Duty: Ghosts*, and *Call of Duty: Black Ops II*), as well as *Battlefield 4*, another entry from a popular military-themed series. Two more video games, chart-topping *Grand Theft Auto V* and *Assassin's Creed IV: Black Flag*, included combat simulation as a heavy component of their themes. Madden NFL 25 and NBA 2K14 represented annual releases from sporting franchises (the annual entry from the popular *FIFA* video game series a notable omission from the U.S. list given its popularity in much of the rest of the world), with *Just Dance 2014* arguably something of a sporting simulation as well. Of the top ten sellers in the United States, then, only the console edition of *Minecraft* and *Disney Infinity* were not primarily action simulations of war, combat, or sport.²³

While video games' technological history provides a classic example of a "spin-off" media technology, with the medium emerging from computing technologies developed for much more serious purposes,⁴ the themes of video

games throughout their history demonstrate the medium's solid grounding in an ancestry of simulating combat and war, and to a lesser extent strategy games. Given that much of the cultural history of sport is arguably based in imitation of war,²⁴ and given that war was an inspiration for many historical strategy games such as chess and its predecessors,²⁵ video games' emphasis on action simulations of sport and war can be viewed as the product of received thematic ancestry based in many centuries of structured games and leisure activities devised to simulate the action of mortal combat. If sport and parlor games both have germs of inspiration in simulating war, then much of the history of video games bears the marks of a pedigree based in simulating all three – with as much action and photorealism as possible.

Alternate Ancestry: Narrative Role-Playing from Tolkien to Dungeons and Dragons to World of Warcraft

The First Online Role-playing Games

While the conceptual roots of video games in action simulations of sport and war are deep, they do not tell the entire story of modern video games' lineage. Midway through the decades-long process of video games' development from rudimentary simulations of tennis and spacecraft battles to blockbuster simulations of American football and war in the Middle East, another branch of video games' conceptual DNA emerged. As with the nascent moments of video games' history in action simulations, a second key ancestor of today's video games also rose from the primordial environment of academic computer research facilities. This second branch of video games' family tree focused not on fast-paced competitive simulation rendered on a visual display, but on something in many ways quite the opposite: an interactive adventure tale scrawled in text on a computer screen.

In 1978, just as the arcade game industry was reeling from an economic crash and the home video game console industry was beginning its first boom on the back of the success of the Atari VCS console, two British computer science students at the University of Essex called Roy Trubshaw and Richard Bartle finished the first functioning version of a very different kind of game that they would continue to refine and develop through two more versions through 1980.²⁶ While even the term "video game" indicates the importance of rich graphical representations to most examples of the medium, Trubshaw and Bartle's game had no graphics at all. Their game, *MUD* (Multi-User Dungeon), instead relied on interactive text commands and automatically generated text feedback for all of players' interactions with the game program, as well as between players using the game at the same time.

MUD's text-only input and output format might seem a rudimentary interface even compared to the commercial video games popular around the

same time, such as the colorful and noisy spectacle of the *Pac-Man* arcade hit that was released in 1980, the same year that the finished third version of *MUD* became available online when Essex University became connected to Internet precursor ARPAnet. Even so, *MUD* became popular enough that it spawned an entire genre of text-based online games (so much so that *MUD* came to be referred to as *MUD1* to differentiate it from its many adaptations, as well as from a later successor dubbed *MUD2*) and influenced some of today's most popular graphical video games.²⁷

To play *MUD*, users connected to the game online by creating and logging into character accounts with names and statistics describing attributes such as stamina. Using these characters, which existed in the game solely as text descriptions like all of the games' other elements, players then navigated a vast game environment by typing commands to travel from location to location, interact with objects and features of the environment, talk to other players, and fight with both other players and computer-controlled characters.²⁸ The game's program responded to the commands with text feedback such as descriptions of places, characters, and objects, as well as feedback describing the results of attempts to carry out actions such as picking up an object or attacking a foe. Aside from indulging in these game dynamics, players could also have conversations with each other via text, either privately or in view of other players. Such conversations might be focused on the game's dynamics, such as threats or offers to cooperate, or they might be discussions about topics unrelated to games altogether.²⁹ In some cases, this feedback was based on randomly generated outcomes using probability weighting, such as the result of an attempt to strike a weak or strong enemy with a given weapon. Thus, beneath the seemingly crude text interface of *MUD* was a richly described virtual space, a complex array of game mechanics mixing chance with strategy, and a bandwidth-lean modality that allowed online game play all over the world long before the Internet was even well-known outside of university research labs.

While in many ways unprecedented, *MUD* was based on existing text-based games that could be played by single users on computers not connected to any online network. One inspiration for *MUD* was *Zork*,³⁰ a text-based computer game published in 1977 and developed by a group of researchers at the Massachusetts Institute of Technology.³¹ Another was *Colossal Cave Adventure*, a text game that was originally programmed in 1975 and 1976 by Will Crowther, a programmer at technology company Bolt, Beranek and Newman, and then developed into an expanded version that would become better known in 1977 by Don Woods, a graduate student at Stanford.³² Both of these games shared the same text interface as *MUD*, but a key difference between *MUD* and previous text-based computer games was that *Colossal Cave Adventure* and *Zork* were programmed to be played by a single user on one computer. While Trubshaw and Bartle borrowed some elements from these games in developing *MUD*, they intended for their game's plot to be an open-ended one determined

by users playing with each other rather than a predetermined adventure arc programmed into the game in advance for a single user.³⁰

The popularity of *MUD* spawned an eponymous genre throughout the 1980s as *MUD* fans developed their own "MUD" games and, eventually, open-source code platforms to be used for creating even more games. As the number of MUDs grew, their themes and game mechanics also became increasingly diverse, so much so that different acronyms became used to describe some MUD variants. For example, some games focused on long sessions of extensive typewritten "role-play," with players taking turns typing rich descriptions of their characters' actions and dialogue to tell a collaborative story in conjunction with their use of game commands to govern actions such as travel and combat.³³ MUDs with such a role-playing focus came to be described by some with the term "MUSH" (Multi-User Shared Hallucination) to distinguish their role-play focus from other MUDs whose users relied more on game commands alone and less on typed role-playing "poses."³⁴ Similarly, games prioritizing users' extensive access to creating new objects and spaces to expand and redefine the game environment were called MOOs (Mud, Object-Oriented).³⁵ A range of MUD variant categories emerged based on other distinguishing features, described by acronyms such as MUCK, MUUSE, and DUM, and sometimes collectively referred to as MU*s, but all retained elements of structure and style from the original *MUD* game's creation of a text-based world related to the user by descriptions of places and objects, and navigable by simple commands.³⁶

While this genre of online text-based games evolved largely from the original *MUD* game and the earlier text games that inspired *MUD* itself, an even earlier conceptual lineage can be identified for these games. An acknowledged inspiration for both *Zork* and *Colossal Cave Adventure*, the pioneering "offline" text-based games that influenced Trubshaw and Bartle's seminal online *MUD* game (so much so that the "Dungeons" part of the *MUD* acronym was in part an homage to a *Zork* adaptation called *Dungeon*),³⁰ was the paper-and-pencil and dice-based "tabletop" role-playing game *Dungeons and Dragons*, which was first published by Gary Gygax and Dave Arneson in 1974.³⁷ Created as a partial adaptation of existing strategy war games, but with players controlling individual characters instead of military units, *Dungeons and Dragons* was the first commercial role-playing game, and has remained a dominant fixture in the genre since.³⁸ *Dungeons and Dragons*' devoted player audience included creators of both the *Zork*³⁹ and *Colossal Cave Adventure*⁴⁰ games. While the original *MUD* game's roots in *Dungeons and Dragons* were therefore somewhat indirect via the tabletop game's influence on earlier text games (Trubshaw and Bartle were not directly inspired by *Dungeons and Dragons* when creating their game), some influential subsequent MUD games developed in the 1980s relied on *Dungeons and Dragons* more directly as a source of both themes and game mechanics. The popularity of *Dungeons and Dragons* themes and mechanics in MUD games was perhaps predictable considering that *Dungeons and Dragons* players were using online

networks as a rudimentary communication tool to facilitate playing their tabletop games across distance even before *MUD* was created.⁴¹

There is, however, a much deeper ancestral vein for both *MUDs* and *Dungeons and Dragons*, in the form of one of the most well-known authors of the last century. A key source of thematic inspiration for *Dungeons and Dragons* was the famed work of J. R. R. Tolkien, a British professor at Oxford University who produced influential scholarship on topics such as the Old English epic poem *Beowulf*⁴² and who achieved much popular fame by penning best-selling fantasy novels such as *The Hobbit*⁴³ and *The Lord of the Rings*.⁴⁴ Tolkien's work, a popular culture staple by the 1970s, had a heavy imprint on the themes of *Dungeons and Dragons*, as is best evidenced by the inclusion of several fantastic creature species (including Tolkien's iconic hobbits) from Tolkien's stories in the original version of the game before legal threats by representatives of the Tolkien estate forced their removal.⁴⁵ Popular themes for many of the *MUDs* and *MU*s* that sprang up on the years following the release of the original *MUD* game include fantasy themes reminiscent of Tolkien's stories, including some *MU*s* games set overtly in the Tolkien literary universe.⁴⁶

Just as an evolutionary path can be traced from arcade and console video games to simulations of sport and combat, then, a separate pedigree can be identified tying the text-based online role-playing games not to early video game prototypes like *Tennis for Two* or *Spacewar!*, but to the narratives and fantasy settings of beloved literary classics. While the trajectories of both display-based video games and text-based online role-playing games have a background in board and tabletop games ranging from chess to *Dungeons and Dragons*, and while both types of games are based in prototypes from universities and research centers ranging from Brookhaven National Laboratory to the University of Essex, their conceptual heritage is otherwise mostly distinct. On one hand, there is a tradition of video games based in efforts to simulate the action of sport and combat, and on the other, there is a tradition of text-based online games based in creating a shared experience of a narrative fantasy story.

Commercial Success of *MUDs*, *MMOs*, and *Virtual Worlds*

Despite the popularity and rapid proliferation of *MUDs* in the years following the first availability of online access to Trubshaw and Bartle's *MUD* game, the genre was not initially a commercial presence. Tolkien's novels sold millions of copies, *Dungeons and Dragons* was a best-selling game spawning edition after edition and adaptation after adaptation, and *Zork* and *Colossal Cave Adventure* were eventually commercialized in 1979⁴⁷ and 1981,⁴⁸ respectively, but the *MUD* game and its first successors did not charge players a fee to access and play. In fact, Bartle chose to explicitly release the *MUD* name and concept into the public domain in 1985.⁴⁹ Many subsequent *MUDs* have held to the same non-commercial principles, likely in part because creators and administrators

have supported the idea of keeping their communities free to the public but also because many *MUD* games borrow from themes, characters, settings, and plot lines of existing intellectual properties.⁵⁰ Many of the most popular *MUD* games are based to varying degrees on popular novels, films, television programs, comic books, and other popular culture staples; while most have been tolerated, implicitly or explicitly, by the owners of those intellectual properties as non-commercial fan communities, commercializing *MUDs* based on valuable intellectual commodities such as *Lord of the Rings*, *Harry Potter*, *Star Wars*, or *A Song of Ice and Fire* would be legally problematic to say the least.

Trubshaw and Bartle's *MUD* game did eventually receive a commercial release in 1985 when it was licensed for use on early commercial online service provider networks, which provided much broader access than the research- and business-oriented networks used to access *MUD* during its earlier years.⁵⁰ Around the mid-1980s, even while non-commercial *MUDs* were proliferating, various other commercial *MUDs* also began to appear. As with the eventually commercialized version of *MUD* these commercial *MUDs* relied on a business model based on licensing the games to online service providers, who in turn charged users hourly rates for access and could therefore make substantial revenue from users who habitually played *MUD* games online. Among the first prominent commercial *MUDs* was *Scepter of Goth*, a game that was released for commercial play in 1983 while its creator, Alan Kliezt, was an undergraduate student at the University of Minnesota.²⁶ Kliezt, who was inspired by the same offline text-based games that influenced *MUD*, as well as by *Dungeons and Dragons*, had begun developing early versions of the game as early as 1978 while still in secondary school. A noteworthy development in the evolution of commercial *MUDs* was the release of *Islands of Kesmai*, another *MUD* inspired by *Dungeons and Dragons* that was released in 1985 and which departed slightly from *MUDs*' text-based format by approximating graphics with text characters arranged to resemble crude maps of the game setting, characters, and objects.⁵¹

The procession of online role-playing games from text-based *MUDs* to more graphics-based descendants continued from there. *Habitat*, a Lucasfilm product created by Chip Morningstar and Randall Farmer in 1985 and released online in 1986, allowed players to interact with each other and the environment via text commands and also represented characters, objects, and settings with simple graphics.⁵² Rather than a fantastic setting, the *Habitat* game environment included more mundane elements such as apartments and bank machines. The graphics of *Habitat* were mostly static, and the game play and interaction between users was mostly driven by text commands and text chat. In 1991, Stormfront Studios and Strategic Simulations released *Neverwinter Nights*, which brought more dynamic graphics that portrayed movement each time a player moved the character avatar with a keyboard arrow key and provided feedback about the results of characters' actions in battles. The game was successful with

a peak subscriber total of more than 100,000 by 1997, and its graphical advancements have earned it retrospective recognition as the first graphical version of the "Massively Multi-player Online Role-Playing Game" genre.⁵³ *Neverwinter Nights* was not simply inspired by *Dungeons and Dragons* like many MUDs, but actually based in a setting of the *Dungeons and Dragons* intellectual property. *Meridian 59*, developed by brothers Andrew and Chris Kirmse while they were students at the Massachusetts Institute of Technology and Virginia Tech, respectively, and released as an unpolished version in 1995 by Archetype Interactive before a more complete commercial launch in 1996 by The 3DO company, upgraded the emerging "graphical MUD" genre with 3D graphics.⁵⁴ While an online game boasting 3D graphics might seem to have little in common with early text-based online games, the relationship between *Meridian 59* and its MUD ancestors is indisputable as the Kirmse brothers acknowledge *Septer of Goth* as their game's original inspiration.⁵⁵

While *Meridian 59* was groundbreaking, its commercial scale was not vast. The game never claimed more than some 12,000 subscribers at any time.⁵⁶ *Ultima Online*, released in 1997 by Origin Systems and Electronic Arts, adapted the medieval theme of Richard Garriott's already-popular *Ultima* computer game series⁵⁷ to find unprecedented commercial success for an online role-playing game as the first such game to amass 200,000 subscribers.⁵⁸ *Ultima Online* popularized the MMORPG genre and encouraged commercial imitators, but nonetheless had deep roots in the MUD tradition; Raph Koster, its lead designer, was an experienced MUD creator and administrator.⁵⁹ *Ultima Online* was closely followed by other successful MMORPG games. *Lineage*, a South Korean MMORPG designed by Jake Song and released in 1998, had a peak membership of as many as 4 million subscribers and remains active in South Korea.⁶⁰ In the West, the release of *EverQuest* in 1999 by Sony's Verant Interactive brand eclipsed *Ultima Online*'s marks for success by attracting more than 400,000 subscribers at the game's peak.⁶¹ Another 1999 MMORPG release, *Asheron's Call* from Turbine and Microsoft, accumulated more than 200,000 subscribers.⁶² *Ultima Online*, *EverQuest*, and *Asheron's Call* have been described as the "big three" MMORPGs because of their impact on the commercial popularization of the genre in the United States and the West.⁶³ Despite their innovations and success, though, all three games and other MMORPGs were still routinely referred to as "improved MUDs" at the height of their success,⁶⁴ a clear testament to the cultural influence of the MUD genre on the MMORPG genre.⁶⁵ In fact, while *EverQuest* was an MMORPG with 3D graphics, it shared so many similarities in its mechanics with the text-based *DikuMUD* that *EverQuest* has been described by MUD co-creator Richard Bartle as "basically a DikuMUD with a graphical front end bolted on."⁶⁶ In response to a minor controversy over the games' apparent similarities, *EverQuest*'s designers provided *DikuMUD*'s administrators with a signed statement testifying that *EverQuest* was not based in code poached from *DikuMUD*.⁶⁷

By the first years of the twenty-first century, the popularity of early MMORPGs had opened the floodgates for waves of emulators, some successful and some short-lived in a crowded market. Many were based on popular films, television programs, and literature such as *Star Wars*, *The Matrix*, *Star Trek*, and *Conan the Barbarian*, or successful video game franchises such as *Final Fantasy* and *The Sims*, though some MMORPGs were original intellectual properties. In 2004, though, the MMORPG market was well and truly dominated by the arrival of Blizzard's *World of Warcraft*, which was a spin-off of the longstanding *Warcraft* video game series that blended conventional MMORPG features (including many inherited similarities with the MUD genre) with new innovations and elements designed to make the game more accessible to players not familiar with MMORPGs.⁶⁸ Within 24 hours of its release, *World of Warcraft* had drawn more than 200,000 subscribers, and more than a million were playing within a few months.⁶⁹ *World of Warcraft*'s player population peaked at more than 12 million, and the game holds a majority share of the world's MMORPG player market.⁷⁰ Despite *World of Warcraft*'s broodingnagian presence on the MMORPG landscape, though, several dozen other commercial MMORPG games have continued to emerge and ebb and flow in popularity in its shadow in recent years.⁷¹

While online role-playing games have undergone a dramatic makeover in terms of both their appearance and audience in the decades since *Zork* and *Colossal Cave Adventure* first began to be passed from computer to computer and MUD first became available online, modern MMORPGs' themes and functions remain firmly grounded in the same base of fantasy adventure stories that drove those first text-based games. Many of the aforementioned milestones reaching online role-playing games described above were inspired or based in part on MUDs and the *Dungeons and Dragons* tabletop role-playing game that preceded them, which in turn was influenced directly by the fantasy literature of J. R. R. Tolkien. In fact, one currently popular MMORPG game from Turbine is based on the *Dungeons and Dragons* franchise, and another from the same company is based on Tolkien's *The Lord of the Rings* novel series. Just as elements of *Colossal Cave Adventure* have been described as "Tolkienesque,"⁷² and the *Dungeons and Dragons* tabletop game that inspired so many MUDs and MMORPGs in a direct or indirect manner originally included Tolkien-created species, *World of Warcraft* has also been described as "Tolkienesque" for its high fantasy setting⁷³ and the inclusion of species such as orcs and elves in its bestiary.⁷⁴ "Tolkienesque" themes have also been the norm across the majority of popular MUDs and MMORPGs throughout the genres' histories.⁷⁵

Just as a line of popular arcade, computer, console, and mobile video games have a firm pedigree in action simulations of sport and combat, online role-playing games such as modern MMORPGs have a parallel ancestry in historical attempts to create a fantastic adventure narrative ranging from text-based computer games to tabletop role-playing games to fantasy literature. In fact,

considering that one of Tolkien's aims was to create a legendary universe to accommodate for England's lack of a comprehensive mythology,⁶⁹ online role-playing games even have a distant (albeit tenuous) tie to the epic works such as *Beowulf* that inspired Tolkien's fiction.

The Current Economic Position and Audience of the Games Industry

This chapter's description of a dual ancestry for video games (see Figure 1.1) only partially describes the medium's myriad roots and developments. While more than two evolutionary pathways have likely served as tributaries feeding the modern video game medium, the two routes described above explain the background of many of the most popular and culturally significant video games today. Most importantly, identifying these dual pedigrees for the modern video game exemplifies that whether or not there are more key pathways of ancestry for the medium, there is certainly more than one received genetic blueprint for the conceptual themes that video games seek to emulate. Therefore, we must conclude that what we call the medium of "video games" is actually a kludge of at least two distinct streams of communication technology conceptualization, innovation, and commercialization. Far from a monolithic economic and social

force, video games are actually in many ways more than one medium, and the meaning of the word "video game" varies widely depending on which video games are referenced. For some, a video game aims to provide the thrill and competition of sport or combat as richly as can be enjoyed; for others a video game is there to engender the creation of a shared narrative adventure story.

Given the catch-all nature of the term "video game," then, clear articulations of the medium's economic impact and audience are elusive given that the diversity in the range of technologies, forms, and themes described as video games is mirrored by diversity in their range of business models and users. Some current estimates of the total revenue of the worldwide video game market are in the neighborhood of \$81.5 billion⁷⁰ to \$93 billion USD,⁷¹ with continued growth predicted in the coming years. As much as a quarter of this revenue is generated by the industry in the United States.

Estimates of the global market are difficult to make with precision, though, as video game industry revenue sources vary widely across game types. Traditionally, the video game industry is heavily reliant on "hits,"¹⁷ even compared to some other hits-dominated media industries. While independent games developed by an individual or a small studio can be profitable, the bulk of the industry's profits are generated by a very small number of smash hits based on years of development by a huge staff. For example, the best-selling video game of 2013, *Grand Theft Auto V*, grossed more than \$1 billion USD in three days; more than two weeks quicker than the 19 days it took for the three biggest film releases of all time to reach the same milestone.⁷² While many MMORPG games and other developing game formats such as mobile phone and tablet games are also dominated by popular titles, their income is more skewed toward ongoing revenue such as subscriptions and purchases of "virtual items."⁷³ In fact, many successful MMORPG games have switched to free-to-play and "freemium" models where access is free and all revenue comes from either option premium fees or "microtransactions" from virtual item sales – a stark contrast to the reliance on blockbuster opening-week sales of action games such as *Grand Theft Auto V*.

Identifying the global video game audience is as nebulous as estimating the industry's economic scope, but one estimate places the audience at more than 1.2 billion souls.⁷⁴ Again, though, the habits of this audience are diverse. While only a slight majority of worldwide game users are male, trends in players' game preferences differ by gender; action and sport titles are most popular among males and puzzle and quiz games more popular among females. Within the MMORPG genre, meanwhile, there is evidence that the audience is much more male-dominated, with males comprising as much as 80–85 percent of that genre's audience.⁵⁶ Game users' habits also differ markedly depending on what devices they use to play games. In the United States, action games are the most popular genre of games played on video game consoles, while strategy games are most popular on computers and casual and social games are most

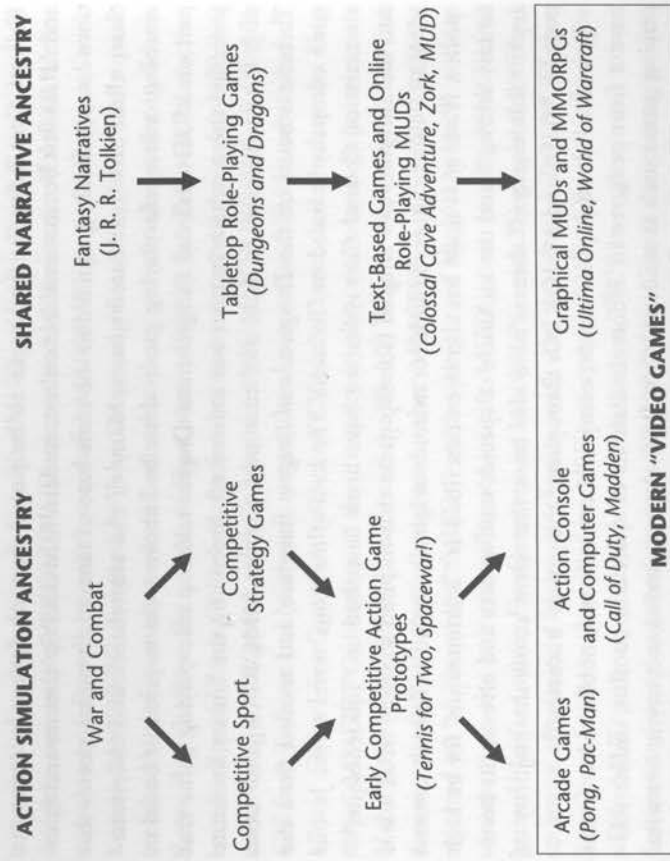


FIGURE 1.1 Dual Evolutionary Pathways Leading to Modern Video Games

popular on mobile devices.⁷⁵ As with the split ancestry of video games, the varied patterns in the industry's economics and audience are also evidence that video games can be best understood as a combination of different media with different conceptual traditions, cultural contributions, and social impact.

The Evolution of Research on Video Games and Societal Concerns

The remaining chapters of this volume provide a detailed account of the state of research dealing with a number of potential societal concerns related to video games, so this chapter will not address that research in depth. To preface those thorough explanations of social research topics that follow, though, this chapter will follow up on the above historical overview of video games' evolution with a very brief glance at the evolution of trends in research on the social impact of video games over the medium's lifespan.

Historically, it has been typical for the arrival of a new media technology to be followed by a spike in research on that medium's potential effects on children.⁷⁶ There has also been a predictable pattern in the trajectory of the focus of that research, with the specific focus of research on social harms tending to move over time from initial concerns about children's time spent with the medium to concerns about effects of specific content.⁷⁷ The research on video games over the past few decades has tended to follow that pattern as well.

While video games were commercially popular by the late 1970s, early research on social issues with games is relatively absent until the early part of the following decade. That early research includes a focus on how children's overall time spent with video games affected their personality⁷⁸ and socialization⁷⁹ and whether video game play was an "addictive" habit⁸⁰ interfering with other healthy activities.⁸¹ Aggression was an outcome also explored in early research on video games' social effects, either as a form of delinquency potentially associated with heavy use⁸² or as an outcome in controlled laboratory research.⁸³

Much of the early research on societal issues with video games also investigated effects of video game exposure generally without regard to content. Through the 1980s and into the 1990s, even research dealing with the question of whether the violence in video games influenced players was often conducted by measuring video game exposure in general,⁸⁴ though there were also a number of studies that isolated violent or "aggressive" content to examine its possible effects.⁸⁵ Through much of the 1990s and 2000s, though, research increasingly focused on effects of violent content specifically, particularly in terms of its effects on measures related to aggression in users.⁸⁶ Similarly, while early research on video game "addiction" and problematic use tended to explore effects of overall video game exposure,⁸⁷ in the last decade more research on "addiction" and problematic behavior has begun to focus on specific types of video games such as online games⁸⁸ and specific genres such as MMORPGs.⁸⁹

Therefore, while early research on societal concerns about video games has tended to lump together the different types of games that all fall under the "video game" banner, the research has tended to evolve toward studies isolating specific types of games and content to explore possible content-specific and genre-specific effects. There is, however, much room for improvement in tailoring research to fit the broad range of video game types and player experiences that exist. For example, while the video game play experience has increasingly become a social experience shared between players online,⁹⁰ research conceptualizations and designs have tended to focus somewhat myopically on effects of game content without regard to other dynamics of video game play settings and experiences. Also, violence has been a primary focus; content associated with other social concerns, such as the potential effects of portrayals of women, has received less attention, with exceptions.⁹¹ Scholarly approaches that better accommodate the differences between types of video games and the different ways people play them, as well as an increased focus on the way players use video games to interact with each other as well as with game content,⁹² are likely to provide more comprehensive answers to societal worries about video games.

Conclusion*

While video games are a powerful social and economic force in the media landscape, they are not a monolithic one. The medium we call "video games" today can actually be seen as a diverse array of entertainment forms with roots in a history of more than one evolutionary stream of conceptualization and innovation. The better we remember that there is variety in the inspirations and innovations leading to the modern video game landscape, the better we will be equipped to try to understand the current societal role of video games.

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